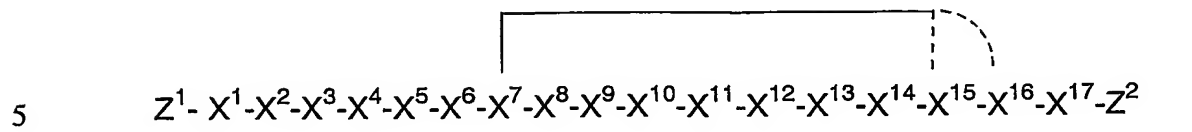
WHAT IS CLAIMED IS:

1. An optionally substituted peptide having the structure:



Z^1- X^1-X^2-X^3-X^4-X^5-X^6-X^7-X^8-X^9-X^{10}-X^{11}-X^{12}-X^{13}-X^{14}-X^{15}-X^{16}-X^{17}-Z^2

wherein X^1 is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X^2 is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X^3 is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X^4 is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, glutamic acid, or norleucine, or a derivative thereof;

X^5 is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X^6 is either a D-amino acid, 5-guanidinopropionic acid or its lower or higher homolog, or a derivative thereof;

X^7 is either lysine, cysteine, homocysteine, 3-mercaptopropionic acid or its higher homolog, penicillamine, 2,3 diamino proprionic acid or its higher homolog, or aspartic acid or its higher homolog, or a derivative thereof;

X^8 is either methionine, norleucine, leucine, isoleucine, valine, methioninesulfoxide, or methioninesulfone, or a derivative thereof;

X^9 is either leucine, isoleucine, valine, alanine, methionine, or 5-aminopentanoic acid, or a derivative thereof;

X^{10} is either asparagine, glutamine, alanine, leucine, isoleucine, valine, norleucine, cyclohexylalanine, phenylalanine, (2')-naphthylalanine, tyrosine, histidine, tryptophan, lysine, serine, threonine, methionine, or citrulline, or a derivative thereof;

X^{11} is either arginine, lysine, citrulline, histidine, homoarginine, norarginine, or nitroarginine, or a derivative thereof;

X^{12} is either valine, leucine, isoleucine, alanine, or methionine, or a derivative thereof;

X^{13} is either phenylalanine, tyrosine, D-(*p*-benzoylphenylalanine), tryptophan, (1')- and (2')-naphthylalanine, cyclohexylalanine, or mono and multi-substituted phenylalanine wherein each substituent is independently selected from the group consisting of O-alkyl, alkyl, OH, NO_2, NH_2, F, I, and Br; or a derivative thereof;

X^{14} is either arginine, lysine, histidine, norarginine, homoarginine, nitroarginine, or 5-aminopentanoic acid, or a derivative thereof;

X^{15} is either proline, alanine, valine, leucine, isoleucine, methionine, sarcosine, or 5-aminopentanoic acid, or a derivative thereof;

X^{16} is an optionally present amino acid that if present is either cysteine, homocysteine, cysteamine, penicillamine, 2,3 diamino propionic acid or its higher homolog, or aspartic acid or its higher homolog, or a derivative thereof;

X^{17} is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

Z^1 is an optionally present protecting group that, if present, is covalently joined to the N-terminal amino group;

Z^2 is an optionally present protecting group that, if present, is covalently joined to the C-terminal carboxy group;

provided that if X^{16} is present, X^{16} and X^7 together form a cyclic group from 32 to 36 atoms joined by either a disulfide bond or an amide bond, wherein if X^7 is either cysteine, homocysteine, 3-mercaptopropionic acid or its higher homolog, or penicillamine, then X^{16} is either cysteine, homocysteine, cysteamine, or

penicillamine; if X^7 is 2,3 diamino proprionic acid or its higher homolog then X^{16} is aspartic acid or its higher homolog, and if X^7 is aspartic acid or its higher homolog then X^{16} is 2,3 diamino proprionic acid or its higher homolog;

further provided that if X^{16} is not present, then X^{17} is not present, Z^2 is not present, X^7 is lysine, and X^{15} and X^7 together form a cyclic group joined by the X^7 Lys epsilon amino group and the X^{15} carboxyl group;

or a labeled derivative of said peptide;

or a pharmaceutically acceptable salt of said peptide or of said labeled derivative.

2. The peptide of claim 1, wherein X^6 is selected from the group consisting of: D-arginine, D- alanine, D-norleucine, D-α-aminobutyric acid, D-valine, D-leucine, D-isoleucine, D- proline, D-methionine, D- phenylalanine, D- asparagine, D-glutamine, D- serine, D-threonine, D- glutamic acid, D-aspartic acid, D- lysine, D-histidine, D-tryptophan, D-tyrosine, D-cyclohexylalanine, D-(2')naphthylalanine, D-ornithine, D-homoarginine, D-nitroarginine, D-norarginine , D-citrulline and 5-guanidinopropionic acid.

3. The peptide of claim 2, wherein X^{10} is either asparagine or glutamine.

4. The peptide of claim 3, wherein X^1, X^2, X^3, X^4, X^5, X^{16} and X^{17} are not present.

5. The peptide of claim 3, wherein X^{16} is present.

6. The peptide of claim 5, wherein X^1, X^2, X^3, X^4, X^5, are not present and X^{17} is either tyrosine or tryptophan.

7. The peptide of claim 5, wherein X^1, X^2, X^3, X^4, X^5, and X^{17} are not present.

8. The peptide of claim 6, wherein Z^1 is either not present or is $-C(O)CH_3$ and Z^2 is either not present or is $-NH_2$.

9. The peptide of claim 7, wherein Z^1 is either not present or is $-C(O)CH_3$ and Z^2 is either not present or is $-NH_2$.

10. The peptide of claim 7, wherein
X^8 is either methionine, norleucine, or N-methyl norleucine;
X^9 is leucine;
X^{11} is arginine;
X^{12} is valine;
X^{13} is phenylalanine, (2')napthylalanine, p-fluoro-phenylalanine, tyrosine, or cyclohexylalanine;
X^{14} is arginine, or alanine;
X^{15} is either proline or sarcosine; and
X^{16} is either cysteine, D-cysteine, aspartic acid, or diamino proprionic acid.

11. The peptide of claim 10, wherein X^6 is either D-arginine, D-alanine, D-norleucine, D-proline, D-phenylalanine, D-asparagine, D-serine, D-glutamic acid, D- lysine, or D-citrulline.

12. The peptide of claim 11, wherein either X^7 is 2,3 diamino proprionic acid and X^{16} is aspartic acid; or X^7 is aspartic acid and X^{16} is 2,3 diamino proprionic acid.

13. The peptide of claim 12, wherein Z^1 is $-C(O)CH_3$ and Z^2 is $-NH_2$.

14. The peptide of claim 11, wherein X^7 is cysteine and X^{16} is cysteine or D-cysteine.

15. The peptide of claim 14, wherein Z^1 is $-C(O)CH_3$ and Z^2 is $-NH_2$.

16. The peptide of claim 15, wherein X^{10} is glutamine.

17. The peptide of claim 1, wherein said peptide consists of a sequence selected from the group consisting of: SEQ ID NOs: 29, 30, 31, 32, 33, and 34.

18. The peptide of claim 17, wherein said peptide consists of SEQ ID NO: 30.

19. A method of screening for a compound able to bind MCH-1R comprising the step of measuring the ability of said compound to affect binding of the peptide of any one of claims 1-18 to MCH-1R.

20. The method of claim 19, wherein said peptide is radiolabeled.

21. A method of selectively producing MCH-1R activity comprising the step of providing a cell functionally expressing MCH-1R with the peptide of any one of claim 1-18.

22. The method of claim 21, wherein said MCH-1R has the amino acid sequence of SEQ ID NO: 35.

23. A method of screening for a MCH-1R antagonist comprising the steps of:

a) combining together a MCH-1R or a functional derivative thereof, a test compound, and the compound of any one of claims 1-18,

b) measuring the ability of said test compound to inhibit an MCH-1R activity as an indication of the ability of said test compound to act as said MCH-1R antagonist.

24. The method of claim 23, wherein said functional MCH-1R is a mammalian MCH-1R.

25. The method of claim 23, wherein said functional MCH-1R is a human MCH-1R.

26. A method for increasing weight in a subject having an MCH-1R comprising the step of administering to said subject an effective amount of the peptide of any one of claims 1-18.

27. A method for increasing appetite in a subject having an MCH-1R comprising the step of administering to said subject an effective amount of the peptide of any one of claims 1-18.

28. A method for measuring the ability of a compound to decrease weight or appetite in a subject having an MCH-1R comprising the steps of:

a) administering to said subject an effective amount of the peptide of any one of claims 1-18 to produce a weight increase or appetite increase,

b) administering said compound to said subject, and

c) measuring the change in weight or appetite of said subject.